Of these, four pink-sided juncos, three red-breasted nuthatches, and two mountain chickadees were fresh enough to be skinned, and were preserved as specimens. Two days later, the only fresh corpses were a mouse, a grasshopper, and a Rocky Mountain creeper, which latter was preserved, having just died. During the ensuing week no additional birds were asphyxiated.

Although unable to estimate the number of birds that perished in the caves adjacent to the Mammoth Hot Springs during the past season, I am of the opinion that the number reached into the hundreds if not thousands. Birds were found dead in about thirty different caves and hollows about the "formation," between Snow Pass and the Mammoth Hot Springs Hotel, near which latter the lowest "bird cave" was discovered. At the suggestion of Mrs. Charles B. Byrne, who visited the St. gian caves in 1902, I requested the Park Superintendent to have the most important caves provided with wire screens for the purpose of keeping birds from entering them, and this will doubtless be done before another season, as the Superintendent and his wife are much interested in the matter.

Following is a list of the species of birds which I found dead in the "Stygian" caves, from April to December, 1902:

1. *Pica pica hudsonica* (Sab.). Black-billed Magpie.
2. *Nucifraga columbiana* (Wils.). Clarke Nutcracker.
3. *Carpodacus cassini* Baird. Cassin Purple Finch.
4. *Spinus pinus* (Wils.). Pine Siskin.
5. *Junco mearnsi* Ridgw. Pink-sided Junco.
6. *Oreospiza chlorura* (Aud.). Green-tailed Towhee.
7. *Piranga ludoviciana* (Wils.). Louisiana Tanager.
8. *Vireo gilvus* (Vieill.). Warbling Vireo.
9. *Dendroica auduboni* (Towns). Audubon Warbler.
10. *Oporornis tolmiei* (Townsend). Macgillivray Warbler.
11. *Certhia americana montana* (Ridgway). Rocky Mountain Creeper.
12. *Sitta carolinensis nelsoni* Mearns. Rocky Mountain Nuthatch.
13. *Sitta canadensis* Linn. Red-breasted Nuthatch.
14. *Parus gambeli* Ridgway. Mountain Chickadee.
15. *Myadestes townsendii* (Aud.). Townsend Solitaire.
16. *Merula migratoria propinqua* Ridgway. Western Robin.

Some Unusual Nests of the Bullock Oriole.

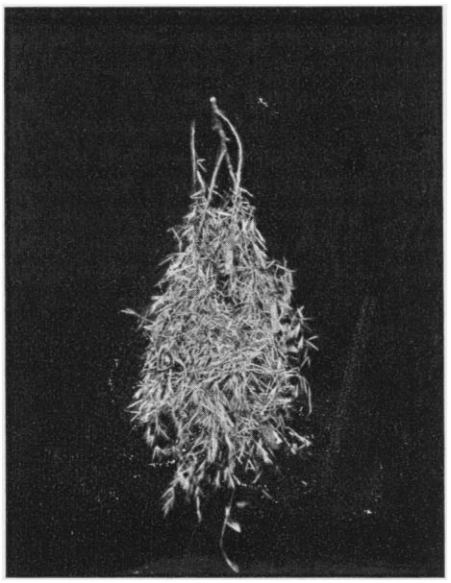
BY C. S. SHARP, ESCONDIDO, CAL.

The popular idea of an oriole's nest seems to be that it is always pensile, supported wholly from the top and the lower part, large and purse-shaped, hanging free to sway with every breeze. I have never seen an illustration of one that was not of this description.

In my observations of nests of the Bullock oriole (*Icterus bullocki*) I have found two distinct types, and presume the same forms are found in the nests of its nearest eastern relative (*galbula*), the nests of others of the genus hardly coming into comparison.

These two types are the truly pensile and what is generally termed the semi-pensile form, although, in reality, it is not pensile at all. With *bullocki* the latter

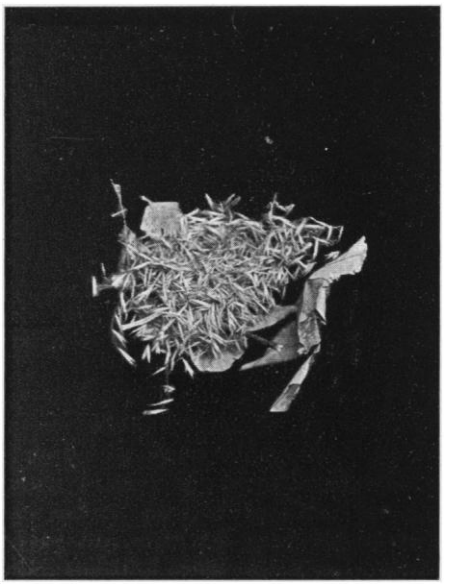
seems to be the more common form. Nests of this type may be placed in an upright fork, or attached to a branch or twig on one side only, the other side being supported by some nearby leaf, stem or branch, or may be placed between two or more nearly parallel branches or close against one with the small lateral twigs embracing it as with encircling arms.



NEST OF BULLOCK ORIOLE, NO 1.

The truly pensile is the "hangbirds" nest of the picture books, and has its support wholly at the top, depending from a small fork or from two near branches, with the opening rather small and the nest below expanding into the well-known form. This type is generally the most pleasing in effect and shows more elaborate and painstaking workmanship. It is usually placed near the end of some low-drooping branch well hidden among the leaves, and is so strongly built that it may stand the wind and rains of several seasons before the final dissolution.

The semi-pensile is a very different type, seldom artistic and generally frail, rarely lasting over one season. It would almost seem as if the main object sought for in its construction was the strength of the bottom. This, and perhaps an inch up on the sides is thick and strong, but above the walls are thin and transparent, and scarcely more than a frame work, but strongly woven and securely fastened to the supporting branches. This type is usually placed near the end of an upward inclining branch, which may be attached to it for its whole length; sometimes at the end of a drooping branch, but in any case it derives its support almost wholly from the side. The bottom never extends down to the base of any fork, a space of an inch or more always being left, but the nest is usually built as low down in the fork as its bulk will allow, thus gaining an additional basal support; the top is generally somewhat flaring being built out to convenient twigs.

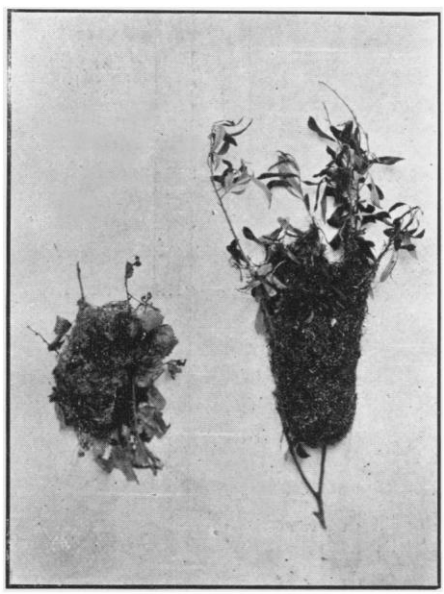


NEST OF BULLOCK ORIOLE, NO. 2.

In the material used in construction the pensile nest shows the greatest variety and the most careful selection. More string and long horse hairs are used, both highly necessary, as the weight is sustained wholly from the top, and these woven through the nest and over the supporting branches give a strength to the whole

structure that is marvelous. In general the material is the same in all: dry grass, shreds of willow or inner cottonwood bark, fine weed stems, horsehair, string, etc., with a lining of soft grasses, and down from the willow or cottonwood piled in, thick and soft. Sometimes the down will be worked into the outside of the nest as well, with pleasing effect. As a rule there is not much variation between the various nests of the different types, but occasionally some rare genius goes beyond his fellows and evolves a structure beautiful and unique. Three of these extra-ordinary nests are herein described.

When first seen by me the first nest was, without exception, the most beautiful nest of this species I ever saw. It was taken from a white oak tree, quite an unusual location in this section, and was near the end of a small drooping branch about fifteen feet from the ground. The twigs to which it was attached formed a fork, and a few inches above, another small twig extended downward in the same direction. The nest was wholly suspended from these, the twigs, with some of the leaves attached being worked into it for a little distance down the sides and back. With these exceptions and two or three long horse hairs it was composed wholly of wild oats and rather loosely woven. A few of the oat heads show on the inside where they were worked into the nest itself, but almost all are on the outside, the long stems being worked into their heads which stood out in a beautiful and graceful fringe all around and below for from one to three inches or more. The effect was striking and unusual. Very unfortunately much handling had destroyed a large part of these before a photograph could be secured. The dimensions in inches are as follows: Depth outside (extreme) 14; depth outside (front) to opening, 8; inside to opening 5½; diameter outside, 7; diameter inside, 4; circumference 21. These measurements are of the nest proper and do not include the fringe of oat heads. The opening is rather triangular in shape from the position and angles of the supporting twigs and is rather more than an inch greater from front to rear than from side to side. The back is built up into the fork and nearly to the branch itself and is six inches higher than in front.



AVERAGE NEST OF BULLOCK ORIOLE, AND NEST NO 3 (RIGHT).

If birds have an eye for the beautiful in their homes, as well as for utility, (and who can say that they do not?) then surely the architects of this structure were thorough artists. It would be hard to conceive of an oriole's nest more artistic or generally pleasing in effect.

The second nest stands rather in a class by itself, being neither pensile nor semipensile in form, and is the only nest of the species I ever saw that was built in that way. It is more like the nests of the other branches of the Icteridæ, and it is hard to believe it is an oriole's nest at all. It is supported almost wholly from the base, one side being built squarely over a small branch which crosses a little to one side of the middle. The other side is supported at the very top by a

small leaf-twig. There are no other supports whatever. This was taken from a sycamore at an elevation of almost twenty feet and was near the end of a somewhat drooping branch where it was well hidden by the large leaves. This also has wild oats for its chief material, the stems being woven closely into the nest itself leaving the heads to stand out for a couple of inches all around. Inside them is grass and quite a little willow cotton at the bottom and a few horse hairs woven in. In its dimensions it is also unusual: depth, outside, 4 inches, inside 3; diameter outside, 5, inside, 3; circumference, 13. This nest is so radically different from the ordinary nest of the species that one cannot help wondering what spirit of retrogression (one might say) possessed its little builders.

The third nest is of the semi-pensile type, but shows a skill in its manufacture that places its builders as far ahead of the ordinary semi-pensile architects as are the weavers of the truly pensile type. When first seen by me at the top of a small willow sapling I took it to be a swarm of bees and regretted that my collecting outfit did not contain suitable apparatus for gathering them in, for I do not like to have the little busy bee waste its sweetness on the desert air and in hollow trees if I can very well prevent it and besides hollow trees are much better adapted to screech owls. The resemblance to a swarm was very great and I was within thirty feet of it before a female oriole flying from the nest showed me my error. It was placed between the two branches of a nearly upright fork in the very top of a small clump of willows, about twelve feet from the ground. One small branch was completely buried in the nest for nearly its whole length, the other secured to it at the top, a little above and a little below the middle and lying close against the nest all the way. The top is rather flaring, being built out to the numerous leaf-twigs, many of which with their leaves are worked in on the top and back. The material used in its construction is wholly shreds of dry grass and of the bark of weed stems, the general color effect being very dark throughout. There are a few pieces of the stems on the outside with the bark partially detached and woven in, the stems hanging loose. For scientific weaving this nest is a marvel and resembles fine crochet work more than anything. The average nest of the Bullock oriole will have bits of string and plenty of horse hair woven in to bind and strengthen it, but this has nothing of the sort. I can not find even one piece of horse hair in the whole nest, nothing but fine and apparently short shreds of grasses and weeds. Holding it before a light one can plainly see the longer foundation lines running through and the marvelous way in which it is all worked together. All the length of the nest the sides are thin and of the same delicate workmanship, the bottom is harder and thicker, but the same material is used throughout. The builders of this nest were the most wonderfully skilled workers of their species that I ever saw and were doubtless old and experienced; no novices could ever have constructed such a nest. The photograph, while showing well the remarkable shape and size fails to give a perfect idea of the fine weaving and material, that only an examination of the nest itself can do.

For comparison I have included in a photograph the nest of another pair of orioles that can fairly be called an average nest, both for size, manner of construction and materials and also attachment to the branch. The measurements of both nests are here given: depth inside, nest 3, 9 inches; average nest 4½ inches; depth outside, nest 3, 9½ inches; average nest 6 inches; diameter inside nest 3, 3½ inches; average nest 3 inches; diameter outside, nest 3, 4 inches; average nest, 3½ inches; greatest circumference, nest 3, 12 inches; average nest, 12 inches. In

both nests the top is flaring and extends out to supporting twigs for an inch or more, the measurements do not include these extensions.

These three nests show peculiarities in shape and in the materials used that would seem to indicate a fixed purpose and design on the part of their builders rather than the result of chance. The wild oats used in the first two is unusual, even in small quantities, yet these birds chose it in preference to everything else, although other materials that satisfied other orioles were in abundance. Concealment seems to have been disregarded, in the first nest especially, for the large bulky structure of wild oats would be a rather difficult thing to hide in the foliage of a white oak and there seemed to be very little if any attempt at it. In the second nest the white bark of the sycamore and large lighter colored leaves made it more easy. In the third nest the fact that what were undoubtedly the same birds built a new nest a few rods away when this was taken, using the same sort of material and building a nest of the same shape and nearly the same size, and of the same fine weaving would show an individual preference that was as decided as it was remarkable. This second nest was not disturbed and the birds raised their brood in peace. I shall watch the locality with interest this season and if the same birds return I am sure I shall know them by their handiwork.

The Phainopepla.

BY M. FRENCH GILMAN.

THIS bird always possessed a fascination for me, though as a small boy, my interest and admiration were mixed with some awe and respect. His easy graceful flight, dignified bearing and hearse-like plumage and colors placed him above the common herd and it were nearly sacrilege to throw rocks at him. This immunity did not extend to the nest and eggs could I but find them. For a long time I sought in vain and began to think they were like the fabled birds of paradise, or like "Topsy." But finally a nest of young birds was found in July and the ice was broken.

There is a dignity and an air of mystery about the bird that appeals to one. His silky, jet plumage, graceful crest and flaming red eyes form a striking combination, and the revelation, as he flies, of the snow patches on his wings is rather startling. As a musician he does not excel, merely repeating at intervals a flute-like note, or when another bird interferes with him, uttering a rasping reproach.

The phainopepla makes his appearance in this vicinity about the 15th of May and remains until about October though stragglers may be seen along in November. I once saw one during a snow storm the middle of January, and he was still dignified though bedraggled. Many of them spend the winter in the mesquite thickets of the Salton sink and Conchilla valley--in and around Indio, Walters, Martinez and Toros. Here they feed on the pinkish berries of the desert mistletoe which infests so many of the mesquite trees. A few of the birds remain all winter at Palm Springs also, feeding on mistletoe berries and the pepper berries of which they seem very fond. A pepper tree with several of the phainopeplas clinging to